United Nations

FCCC/IDR.6/AUS

Framework Convention on Climate Change

Distr.: General
24 February 2015

English only

Report of the technical review of the sixth national communication of Australia

Parties included in Annex I to the Convention are requested, in accordance with decision 9/CP.16, to submit a sixth national communication to the secretariat by 1 January 2014. In accordance with decision 7/CMP.8, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their sixth national communication supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. In accordance with decision 15/CMP.1, these Parties shall start reporting the information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention for the first year of the commitment period. This includes supplementary information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol.

This report presents the results of the technical review of the sixth national communication and supplementary information under the Kyoto Protocol of Australia conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" and the "Guidelines for review under Article 8 of the Kyoto Protocol".

GE.15-03536 (E)

1503536

Please recycle

Contents

		Paragraphs	*Page*
I.	Introduction and summary	1–10	3
	A. Introduction	1–5	3
	B. Summary	6–10	3
II.	Technical review of the reported information in the national communication and supplementary information under the Kyoto Protocol	11–141	6
	A. Information on greenhouse gas emissions and national circumstances relevant to greenhouse gas emissions and removals, including other elements related to the Kyoto Protocol	11–33	6
	B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol	34–71	12
	C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol	72–111	19
	D. Provision of financial resources and technology transfer to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol	112–122	30
	E. Vulnerability assessment, climate change impacts and adaptation measures	123–128	32
	F. Research and systematic observation	129–135	34
	G. Education, training and public awareness	136–141	35
III.	Summary of reviewed supplementary information under the Kyoto Protocol	142–146	36
	A. Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol	142–143	36
	B. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol	144–146	37
IV.	Conclusions and recommendations	147–156	37
V.	Questions of implementation	157	40
Annex			
	Documents and information used during the review		41

I. Introduction and summary

A. Introduction

1. For Australia, the Convention entered into force on 21 March 1994 and the Kyoto Protocol on 11 March 2008. Under the Convention, Australia made a commitment to reducing its greenhouse gas (GHG) emissions by 5 per cent by 2020 compared to the 2000 level. Under the Kyoto Protocol, Australia committed itself to limiting the growth in its GHG emissions to 8 per cent in relation to the base year level[1] during the first commitment period, from 2008 to 2012. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Australia committed to reduce its GHG emissions by 0.5 per cent compared to the base year level.

2. This report covers the in-country technical review of the sixth national communication (NC6) of Australia, coordinated by the secretariat, in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" (decision 23/CP.19) and the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1).

3. The review took place from 7 to 12 October 2014 in Canberra, Australia, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Leandro Buendia (Philippines), Mr. Ole-Kenneth Nielsen (Denmark), Mr. Ioannis Sempos (Greece) and Mr. Xiaohua Zhang (China). Mr. Buendia and Mr. Nielsen were the lead reviewers. The review was coordinated by Ms. Xuehong Wang (secretariat).

4. During the review, the expert review team (ERT) examined each section of the NC6. The ERT also evaluated the supplementary information provided by Australia as a part of the NC6 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by Australia in its 2014 annual submission and previous submissions under Article 7, paragraph 1, of the Kyoto Protocol.

5. In accordance with decisions 23/CP.19 and 22/CMP.1, a draft version of this report was communicated to the Government of Australia, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

B. Summary

6. The ERT conducted a technical review of the information reported in the NC6 of Australia in accordance with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol. According to decision 13/CMP.1 on accounting for the assigned amount under the Kyoto Protocol, as the land use, land-use change and forestry sector is a net source of emissions for Australia in the base year, the total base year emissions for the purpose of the calculation of the assigned amount under the Kyoto Protocol include also GHG emissions from the conversion of forest land (deforestation).

reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines on NCs). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[2] is provided in the NC6 (see paras. 142 and 143 below). The supplementary information on the minimization of adverse impacts referred to in paragraph 4 above is complete and transparent.

7. Although Australia did not consider all recommendations provided in the report on the in-depth review of the fifth national communication (NC5), the NC6 was still significantly improved compared to the NC5 of Australia.[3] The ERT commended Australia for its improved reporting. During the review, Australia provided further relevant information related to projection scenario definitions, policies and measures (PaMs), financial information, technology transfer, capacity-building, adaptation and vulnerability. This is further detailed in chapter II below.

1. Completeness and transparency of reporting

8. Gaps and issues related to the reported information identified by the ERT are presented in table 1 below.

2. Timeliness

9. The NC6 was submitted on 5 August 2013, before the deadline of 1 January 2014 mandated by decision 9/CP.16.

3. Adherence to the reporting guidelines

10. The information reported by Australia in its NC6 is mostly in adherence to the UNFCCC reporting guidelines on NCs as per decision 4/CP.5 (see table 1).

[2] Decision 15/CMP.1, annex, chapter II.
[3] FCCC/IDR.5/AUS.

Table 1

Assessment of completeness and transparency of reported information in the sixth national communication of Australia[a]

Sections of national communication	*Completeness*	*Transparency*	*Reference to paragraphs*	*Supplementary information under the Kyoto Protocol*	*Completeness*	*Transparency*	*Reference to paragraphs*
Executive summary	Complete	Transparent		National systems	Complete	Transparent	
National circumstances	Complete	Transparent		National registries	Complete	Transparent	
Greenhouse gas inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
Policies and measures (PaMs)	Mostly complete	Mostly transparent	36, 62, 64, 67	PaMs in accordance with Article 2	Mostly complete	Transparent	69
Projections and total effect of PaMs	Mostly complete	Mostly transparent	76, 79, 87, 103, 105, 108	Domestic and regional programmes and/or arrangements and procedures	Mostly complete	Transparent	27, 28
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent		Information under Article 10[b]	Mostly complete	Mostly transparent	121, 122
Financial resources and transfer of technology	Mostly Complete	Mostly transparent	113, 114, 121, 122	Financial resources[c]	Complete	Mostly transparent	113
Research and systematic observation	Complete	Transparent		Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	
Education, training and public awareness	Complete	Transparent					

[a] A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in the chapter on conclusions and recommendations.

[b] For the purposes of reporting in table 1, this assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7, of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant for developed country Parties and other developed Parties included in Annex II to the Convention only. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

[c] Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention.

II. Technical review of the reported information in the national communication and supplementary information under the Kyoto Protocol

A. Information on greenhouse gas emissions and national circumstances relevant to greenhouse gas emissions and removals, including other elements related to the Kyoto Protocol

1. Information on relevant national circumstances

11. In its NC6, Australia provided a concise description of its national circumstances, and information on how these national circumstances affect GHG emissions and removals over time. In addition to information on geography, demography and government, Australia also provided information on the status of its economy, energy production and consumption, industry, transport, landscape and environment, climate, agriculture, forestry, building stock and urban structure, and waste. Australia also elaborated on the framework legislation and key policy documents on climate change. Further information on the review of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B below.

12. The ERT noted that during the period 1990–2012, Australia's population and gross domestic product (GDP) increased by 34.7 and 103.4 per cent, respectively, while GHG emissions per GDP and GHG emissions per capita decreased by 36.1 and 2.8 per cent, respectively. Table 2 below illustrates the national circumstances of Australia by providing some indicators relevant to GHG emissions and removals.

13. As shown in table 2, the main drivers of emission trends in Australia include: the high population growth; strong economic growth; increasing energy production and exports primarily due to increasing demand from growing economies that are not members of the Organisation for Economic Co-operation and Development; and a growing transport sector in Australia.

14. Australia's increasing population and industries have led to steadily growing demand for energy and natural resources, and depend heavily on long-haul transport due to the widely dispersed nature of its settlements, the location of natural resources and the distance from overseas markets. As a result, Australia has very high per capita GHG emissions, and thus ranks near the top of Parties included in Annex I to the Convention in terms of this indicator.

Table 2
Indicators relevant to greenhouse gas emissions and removals for Australia

	1990	*2000*	*2005*	*2012*	*Change 1990–2012 (%)*	*Change 2011–2012 (%)*
Population (million)	17.17	19.27	20.54	23.13	34.7	1.6
GDP (2005 USD billion using PPP)	428.92	606.59	719.06	872.42	103.4	2.6
TPES (Mtoe)	86.38	108.10	113.48	128.27	48.5	4.4

	1990	2000	2005	2012	Change 1990–2012 (%)	Change 2011–2012 (%)
GHG emissions without LULUCF (kt CO_2 eq)	414 973.70	489 812.92	523 479.26	543 648.45	31.0	0.4
GHG emissions with LULUCF (kt CO_2 eq)	545 495.24	513 026.70	548 425.16	558 809.33	2.4	16.2
GDP per capita (2005 USD thousand using PPP)	24.98	31.48	35.01	37.72	51.0	1.0
TPES per capita (toe)	5.03	5.61	5.52	5.55	10.3	2.8
GHG emissions per capita without LULUCF (t CO_2 eq)	24.17	25.42	25.49	23.59	−2.8	−1.2
GHG emissions per GDP unit without LULUCF (kg CO_2 eq per 2005 USD using PPP)	0.97	0.81	0.73	0.62	−36.1	−3.1
GHG emissions per capita with LULUCF (t CO_2 eq)	31.77	26.62	26.70	24.16	−24.0	−9.5
GHG emissions per GDP unit with LULUCF (kg CO_2 eq per 2005 USD using PPP)	1.27	0.85	0.76	0.64	−49.6	−16.0

Sources: (1) GHG emission data: Australia's 2014 GHG inventory submission, version 1.1; (2) Population, GDP and TPES data: International Energy Agency.

Note: The ratios per capita and per GDP unit are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.

2. Information on the greenhouse gas inventory, emissions and trends

15. In the NC6, Australia has provided a summary of information on GHG emission trends for the period 1990–2011. This information is fully consistent with the national GHG inventory submission from April 2013. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO_2 eq) (given in the common reporting format tables), are provided in an annex to the NC6. Emission trends per sector and per gas are sufficiently explained in the NC6. However, to enhance the transparency of its reporting the ERT encourages Australia to provide diagrams for the GHGs reported in the summary tables. Moreover, the ERT suggests that Australia include emission intensity indicators in the next national communication (NC) submission in order to provide the reader with a better understanding of emission trends and drivers. Examples of emission intensity indicators include: the total CO_2 intensity per GDP unit or per capita and the specific CO_2 emissions of electricity production (t/GWh). During the review, the ERT took note of the Party's 2014 annual GHG inventory submission. The relevant information therein is reflected in this report.

16. Total GHG emissions[3] excluding emissions and removals from land use, land-use change and forestry (LULUCF) increased by 31.0 per cent between 1990 and 2012, whereas total GHG emissions including net emissions or removals from LULUCF increased by 2.4 per cent over the same period. The strong increase in total GHG emissions was mainly attributed to CO_2 emissions, which increased by 44.1 per cent over this period. The majority of CO_2 emissions in Australia arise from the combustion of fossil fuels, with the largest single contributor to CO_2 emissions being electricity generation (which relies mainly on coal), followed by road transport. The increase in CO_2 emissions in turn (excluding LULUCF) was owing to increasing population, household incomes, number of vehicles and increasing exports from the resources sector.

17. The LULUCF sector is another major source of CO_2 emissions. In 2012, net CO_2 emissions from LULUCF were 9,296.85 kt, which represents a significant decrease of 92.5 per cent from 1990 levels. The decrease in emissions from LULUCF almost entirely offset the impact on the overall trend from the fast growing emissions from the energy sector. The underlying trend of declining CO_2 emissions from the LULUCF sector since 1990 has mainly been due to the decline in emissions from deforestation (forest land converted to cropland and grassland) resulting from changes in economic conditions in the farm sector and regulatory changes to domestic vegetation management frameworks. The annual fluctuations of emissions from the LULUCF sector are affected by other factors, principally natural disturbances such as wildfires and inter-annual climate variability.

18. Methane (CH_4) emissions amounted to 5,319.50 kt CO_2 eq in 2012. This represents a decrease of 3.0 per cent from 1990 emission levels. In 2012, CH_4 emissions from the agriculture sector were 5.5 per cent lower than in 1990 due to reductions in the animal population and areas for rice cultivation, as these industries had suffered from recent droughts. The overall trend of decrease in CH_4 emissions was also due to the improved rates of CH_4 recovery from waste landfills, which have been improved significantly compared to 1990 levels. However, in 2012, CH_4 emissions from the energy sector were increased by 21.3 per cent compared to 1990, due to the increased coal mining activities for domestic use and export.

19. Emissions of nitrous oxide (N_2O) amounted to 88.67 kt CO_2 eq in 2012. Emissions increased by 35.3 per cent from 1990 levels due to the intensification of the livestock industries and increased application of fertilizers. N_2O emissions from transport have more than doubled between 1990 and 2012, due to an increase in the number of vehicles using three-way catalytic converters.

20. Emissions of fluorinated gases (F-gases) amounted to 8,332.92 kt CO_2 eq in 2012, which represents a 57.3 per cent increase from 1990 levels. This increase is mainly due to the continuous substitution of chlorofluorocarbons (CFCs) that are controlled under the Montreal Protocol with hydrofluorocarbons (HFCs). An analysis of the drivers of GHG emissions trends in each sector is provided in chapter II.B below. Table 3 provides an overview of GHG emissions by sector from 1990 to 2012.

[3] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding land use, land-use change and forestry, unless otherwise specified.

Table 3
Greenhouse gas emissions by sector in Australia, 1990–2012

Sector	GHG emissions (kt CO_2 eq)				Change (%)		Share[a] by sector (%)	
	1990	2000	2011	2012	1990–2012	2011–2012	1990	2012
1 Energy	286 748.82	357 849.32	409 947.74	413 358.85	44.2	0.8	69.1	76.0
A1 Energy industries	143 005.63	192 472.72	221 520.10	221 561.99	54.9	0.0	34.5	40.8
A2 Manufacturing industries and construction	35 554.13	38 237.62	39 196.32	39 947.60	12.4	1.9	8.6	7.3
A3 Transport	60 264.97	72 692.11	88 521.46	90 205.74	49.7	1.9	14.5	16.6
A4–A5 Other	16 030.07	18 942.35	21 840.47	21 714.70	35.5	–0.6	3.9	4.0
B Fugitive emissions	31 894.03	35 504.53	38 869.39	39 928.82	25.2	2.7	7.7	7.3
2 Industrial processes	24 674.23	25 838.67	34 094.23	31 205.77	26.5	–8.5	5.9	5.7
3 Solvent and other product use	IE, NA, NO	IE, NA, NO	IE, NA, NO	IE, NA, NO	NA	NA	NA	NA
4 Agriculture	86 506.72	92 253.95	84 550.95	87 360.56	1.0	3.3	20.8	16.1
5 LULUCF	130 521.54	23 213.78	–60 649.03	15 160.88	–88.4	–125.0	31.5	NA
6 Waste	17 043.92	13 870.98	12 949.84	11 723.27	–31.2	–9.5	4.1	2.3
7 Other	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	**545 495.24**	**513 026.70**	**480 893.73**	**558 809.33**	**2.4**	**16.2**	**NA**	**NA**
GHG total without LULUCF	**414 973.70**	**489 812.92**	**541 542.76**	**543 648.45**	**31.0**	**0.4**	**100.0**	**100.0**

Source: Australia's 2014 GHG inventory submission, version 1.1 (for GHG emission data).

Note: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

Abbreviations: IE = included elsewhere, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

[a] The shares of sectors are calculated relative to GHG emissions without LULUCF, for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

3. National system

21. Australia provided in its NC6 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The description includes all the elements mandated by decision 15/CMP.1. The arrangements for collecting activity data, selecting emission factors and methods, developing the emission estimates, identifying key sources, processing recalculations, carrying out quality assurance/quality control activities, archiving inventory data, developing improvement plans, and the consideration and approval of the national GHG inventory are in line with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The ERT took note of the review of the changes to the national system as reflected in the report of the individual review of GHG inventory of Australia submitted in 2014.

22. During the review, Australia provided updated information on the change in the single national entity for GHG inventories after the submission of its NC6. At the time of the submission of the NC6, the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) was assigned as the single national entity for the national system for GHG inventory preparation. With the new Government in place since September 2013, the Department of the Environment (DOE) has become the single national entity.

23. The ERT noted that although the single national entity for GHG inventories was changed, the roles and responsibilities of various agencies and entities involved remained unchanged. Roles and responsibilities of these agencies are clearly established, and the corresponding institutional, legal and procedural arrangements continue to be well in place to ensure the preparation and reporting of inventories following the relevant guidelines. The ERT commends Australia for providing transparent and complete information on its national inventory arrangements and national system.

4. National registry

24. In its NC6, Australia has provided information on the national registry in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1. The ERT took note of the review of the changes to the national registry as reflected in the report of the individual review of the GHG inventory of Australia submitted in 2013. The information contained in the national registry is found to be in accordance with the records of the international transaction log (ITL) and the clean development mechanism registry, and meets the requirements referred to in decision 22/CMP.1, annex, paragraph 88(a–j). The transactions of Kyoto Protocol units initiated by the national registry are in accordance with the requirements of the annex to decision 5/CMP.1 and the annex to decision 13/CMP.1. No discrepancy has been identified by the ITL and no non-replacement has occurred. Australia's national registry has adequate procedures in place to minimize discrepancies.

25. The ERT commends Australia for the complete and transparent information provided on the national registry and encourages Australia to continue with the practice.

5. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

26. Australia has reported in its NC6 comprehensive and well-organized information on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol.

27. In the NC6, Australia did not include information required by the UNFCCC reporting guidelines on NCs regarding the national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources.

28. During the review, Australia provided information on Australia's Native Vegetation Framework, which is a national framework to guide the ecologically sustainable management of Australia's native vegetation. The direct intent of the policy is to target the extent of native vegetation and to promote revegetation for that purpose. All native vegetation in Australia is managed within the relevant state and territory legislation, having regard for the National Vegetation Framework as far as possible. The ERT recommends that Australia in its next NC provide this information, including a description of the Native Vegetation Framework.

29. Owing to a change in Government after the submission of the NC6 and the first biennial report (BR1), there have been a number of changes to domestic programmes and legislative arrangements. During the review, Australia presented in detail on the changes that had occurred since the last submissions. The information contained in the following paragraphs is based on the latest available information as presented by Australia during the review.

30. The ERT took note of the information provided during the review week on Australia's changes in domestic institutional arrangements. In particular, the ERT noted that the overall responsibility for climate change policymaking, which was formerly assigned to DIICCSRTE, now lies within two departments: DOE and the Department of Foreign Affairs and Trade. A number of national institutions are also involved in the climate policy issues, particularly the Department of Industry.

31. Despite the change in the main policy instrument, other institutional and administrative arrangements remain largely unchanged. The Clean Energy Regulator will remain as the implementation agency to administer the carbon price, the Emissions Reduction Fund (ERF), the Renewable Energy Target (RET), the Carbon Farming Initiative (CFI), the National Greenhouse and Energy Reporting Scheme (NGERS) and the Australian National Registry of Emission Units (ANREU). The Climate Change Authority remains to provide advice on climate change measures such as whether Australia should introduce an emissions trading scheme (ETS) and to review legislated schemes such as CFI/ERF and RET. The Clean Energy Finance Corporation and the Australian Renewable Energy Agency will be responsible for capital investment in: renewable energy; low-emission technologies and energy efficiency; and renewable energy solutions. The states and territories and local government will continue to be involved in the implementation of climate policies. NGERS will remain as Australia's measurement, reporting and verification framework. The ERT suggests that Australia provide a brief description of its current domestic programmes and legislative arrangements, and updated information thereon in its next submission.

32. During the review week, Australia also provided additional information on changes in its legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its target. The 2011 Clean Energy Act that introduced carbon pricing and an ETS has been repealed. The Australian Government's ERF through the CFI Amendment Act was proclaimed into effect on 13 December 2014 and is the centrepiece of the Government's Direct Action Plan. The ERF will operate alongside existing programmes such as RET and energy efficiency standards on appliances, equipment and buildings. The ERF will provide incentives for emission reduction activities across the Australian economy, and will build on the existing CFI. It will also underpin the implementation of the Kyoto Protocol. The Clean Energy Regulator will remain as the implementation agency to administer carbon price, ERF, RET, CFI, NGERS and ANREU. The ERT suggests that Australia provide more updates on the above key policies in its next submission.

33. Australia provides transparent information to the public through various means, including the Internet. Information on policies and legislative arrangements is readily available from the websites of the different institutions (e.g. DOE and the Clean Energy Regulator). The ERT commends Australia for the transparent dissemination of information to the public.

B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

34. Australia has provided in its NC6 comprehensive information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol.

1. Policies and measures related to implementation of commitments under the Convention

35. In its NC6, Australia reported on its PaMs adopted and implemented in order to achieve its commitments under the Convention. Australia provided information on PaMs by sector and partially by gas and a description of the principal PaMs. Australia has also provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, in accordance with the objective of the Convention. The main PaM described in the NC6 is the ETS. However, the 2011 Clean Energy Act that introduced the ETS has been repealed since the submission of the NC6.

36. The NC6 provides textual information on PaMs required by the UNFCCC reporting guidelines on NCs. However, in its NC6, Australia only presents a very limited number of PaMs in tabular format, which makes it difficult for the ERT to get an overview of the type of instrument, status, start and end dates, implementing entity and the GHG targeted by each individual PaM. In order to improve transparency, the ERT recommends that for each sector, Australia supplements the textual descriptions of the principal policy and measures with table 1 of the UNFCCC reporting guidelines on NCs, regardless of whether the mitigation effect has been quantified or not.

37. Of the numerous PaMs described in the NC6, the mitigation effect has been reported for only nine. The previous in-depth review encouraged Australia to quantify the effect of the main PaMs. During the review, Australia provided more information on the mitigation effect of some PaMs. The ERT is of the view that the quantification of a larger number of PaMs would improve the transparency of reporting and would make it easier to monitor the progress in implementation and assess the consistency between the PaMs and projections. The ERT strongly encourages Australia to continue assessing the effects of additional PaMs and report a quantitative estimate of the impacts of individual PaMs or collections of PaMs in its next NC submission.

38. During the review, Australia informed the ERT that the ERF will be built on a similar framework to that which has been used for the CFI. The Party also explained that the ERF was going through political negotiations and that there was therefore no information currently available on the expected mitigation effect of the ERF. The abatement potential of the ERF will depend on the final design of the safeguard mechanism, which will be settled in 2015. It will also be influenced by the methods and the projects that come forward to auction under them. The ERT therefore considers that it is of critical importance that Australia includes in the next submission information on the expected mitigation effect of the ERF, in terms of GHG emissions avoided, or sequestered, in 2020, divided by sector and by gas.

39. Australia provided information in its NC6 on the cost of implementation for a limited number of its PaMs. For some PaMs, the information is included, but this is not done consistently across all PaMs. During the review, Australia provided further information, including that an allocation of Australian dollars (AUD) 2.55 billion has been made to the ERF. The ERT encourages Australia to include information, to the extent possible, on the cost of implementation of more PaMs in its next NC submission.

40. Some of the recommendations from the previous review were taken into consideration in order to improve reporting in the NC6, including the recommendation that in its reporting of PaMs, Australia include information on the status of implementation, as well as on the implementing entity for each PaM, and that Australia report the type(s) of different PaMs. The ERT commends Australia for the improvement in the reporting of PaMs in this regard.

41. During the review, Australia provided additional information, elaborating on the changes that had occurred in the climate policy as a result of the change in Government. More details on the information provided are included in the following chapters.

2. Policy framework and cross-sectoral measures

42. The key framework for climate and energy policy at the time of the submission of the NC6 was the ETS. Of the PaMs with a quantified mitigation effect, this was by far the most important, with an expected mitigation effect in 2020 of 148,300 kt CO_2 eq. As noted in chapter II.A.5 above, the Clean Energy Act that introduced carbon pricing/ETS has been repealed. It has been replaced by the ERF that was introduced under the Direct Action Plan. A total amount of AUD 2.55 billion has been allocated to the ERF to provide incentives for emission reductions across various sectors through an auction scheme.

43. In its NC6, Australia reported a commitment to an unconditional target of: reducing national GHG emissions of 5 per cent below the 2000 level by 2020; up to 15 per cent below the 2000 level under conditions that relate to the extent of global action; and up to 25 per cent below the 2000 level under strict conditions, including comprehensive global action capable of stabilizing atmospheric GHG concentrations at 450 parts per million or lower.[1]

44. In Australia, responsibility for addressing climate change is shared across three levels: the federal government; six state governments and two territory governments; and around 700 local authorities. The Council of Australian Governments (COAG) is the main forum for intergovernmental cooperation in Australia, and comprises the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association. COAG initiates, develops and monitors the implementation of policies and reforms that are of significant national importance, including cooperation on, integration with and the implementation of, climate change policy.

45. State, territory and local governments also play an important role in shaping Australian climate change policy by developing legislation at their respective levels. As part of the National Strategy on Energy Efficiency, all state and territory governments have developed regulatory and voluntary energy efficiency and sustainability PaMs to improve energy efficiency efforts across a range of sectors including for buildings, appliances and equipment, industry and business, government, transport, skills, innovation, advice and education. Most states and territories have implemented sustainability and energy efficiency PaMs that improve the energy efficiency of Australia's building stock. Table 4 provides a summary of the reported information on the PaMs of Australia.

[1] For more information, see <http://www.climatechange.gov.au/climate-change/greenhouse-gas-measurement-and-reporting/australias-emissions-projections/australias>.

Table 4
Summary of information on policies and measures reported by Australia

Sectors affected	*List of key policies and measures*	*Estimate of mitigation impact (kt CO_2 eq)*
Policy framework and cross-sectoral measures		
	Emissions Reduction Fund	NE[a]
	Emissions trading scheme[b]	148 300[c]
	Greenhouse Gas Abatement Scheme	1 000
	Greenhouse friendly	300
Energy		
Energy supply	Smart Grid and Smart City	NE
	Remote Indigenous Energy Program	NE
Renewable energy	Renewable Energy Target	NE
Energy efficiency	National Strategy on Energy Efficiency	
	Energy Efficiency Opportunities Program	NE
	Industrial Energy Efficiency Data Analysis Project	NE
	Commercial Building Disclosure Program	NE
	National Construction Code	NE
	Energy Efficiency in Government Operations	NE
	Energy Savings Initiative	NE
	Inefficient incandescent lighting phase-out	NE
	Local Government Energy Efficiency Program	NE
	Community Energy Efficiency Program	NE
	Low Income Energy Efficiency Program	NE
Residential and commercial sectors	Heating, ventilation and air-conditioning high-efficiency systems strategy	NE
Transport	Smart Travel	400
	Green Vehicle Guide	NE
	Fuel Consumption Labelling	NE
Industrial sectors	Clean Technology Program	NE
	The equivalent carbon price on synthetic greenhouse gases	NE
	Destruction Incentives Program	NE
Agriculture	Carbon Farming Initiative	1 900
Forestry	Carbon Farming Initiative	4 200
	Queensland and New South Wales land clearing legislation	18 400
Waste management	Carbon Farming Initiative	1 100

Note: The greenhouse gas reduction estimates given for some measures are reductions in carbon dioxide or carbon dioxide equivalent for 2020.

Abbreviation: NE = not estimated.

[a] The abatement potential of the Emissions Reduction Fund (ERF) will depend on the final design of the safeguard mechanism, which will be settled in 2015. It will also be influenced by the methods and the projects that come forward to auction under them. It is anticipated that the first auction under the ERF will be held in 2015.

[b] The emissions trading scheme (ETS) (effective since July 2012) was repealed in 2014 and was therefore only in operation for a short time. The mitigation impact for 2020 assumed that the scheme would be in effect until 2020. The ERF is being put in place instead of the ETS.

3. Policies and measures in the energy sector

46. Between 1990 and 2012, GHG emissions from the energy sector increased by 44.2 per cent (126,610.03 kt CO_2 eq), mainly owing to increases in fossil fuel consumption both in stationary and mobile combustion that were driven by increasing population and demand for electricity, as well as an increase in fugitive emissions that was driven by increased activity in the extraction of coal, oil and gas. The trend in GHG emissions from fuel combustion showed notable increases in transport (49.7 per cent or 29,940.77 kt CO_2 eq) and energy use in other sectors (e.g. commercial and residential sectors) (35.5 per cent or 5,684.63 kt CO_2 eq).

47. ***Energy supply***. Australia's energy supply is dominated by fossil fuels (predominantly black and brown coal and natural gas) that accounted for 94.4 per cent of the total primary energy supply in 2012.[b] The consumption of coal decreased over the period 2010–2014. Nevertheless, coal remains the fuel of choice for power generation in Australia. The contribution of renewable energy sources (RES) comes mainly from hydropower, but there is increasing production of solar and wind power. As noted in paragraph 42 above, the main PaM for energy supply (ETS) has been repealed and replaced with the ERF.

48. ***Renewable energy sources***. Australia has set a 20 per cent RET by 2020 with regard to electricity supply from RES. In order to achieve a 20 per cent renewable energy share in 2020, Australia developed a national legislated RET scheme to deliver the additional generation required, on top of generation from pre-existing renewable energy power stations (mainly large hydroelectric power stations). Its implementation is overseen by the Clean Energy Regulator. The RET scheme creates a guaranteed market for additional renewable energy deployment using a mechanism of tradable certificates that are created by renewable energy generators such as wind farms and owners of small-scale renewable energy systems, including solar panels and solar water heaters. Demand for certificates is created by placing a legal obligation on entities that buy wholesale electricity (mainly electricity retailers) to source and surrender these certificates to the Clean Energy Regulator to demonstrate their compliance with annual obligations. The legislation was amended in 2010, and from 1 January 2011, the scheme was divided into two categories: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). Projects supported by LRET include wind farms, commercial solar and geothermal power stations. SRES provides assistance to operators of small-scale installations based on technologies such as photovoltaic panels and solar or heat pump hot-water heaters. LRET is capped by annual targets, while SRES is uncapped to ensure all eligible small-scale installations receive support.

49. During the review, Australia clarified that the legislated target under the LRET for 2020 is set in units of additional generation (41,000 GWh) rather than in percentage terms. In 2013, the electricity produced from RES amounted to around 33,000 GWh. Australia further informed the ERT that a review of RET is currently ongoing, which could lead to changes in its levels. According to the RET review report, demand for electricity has been

[b] Source: International Energy Agency, 2014.

declining and forecasts for electricity demand in 2020 are much lower than previously estimated. This could lead to a 26 per cent share of RES in 2020 if the legislated target of 41,000 GW for LRET is maintained.

50. The ERT considers that it is of great importance that Australia report on any changes to the RET in the next NC and biennial report (BR) submissions. Furthermore, the ERT encourages Australia to include RET, preferably separated by LRET and SRES, in the tabular format for reporting PaMs and estimate the expected mitigation effect.

51. ***Energy efficiency***. The National Strategy on Energy Efficiency aims to help accelerate energy efficiency improvements in households and businesses across all sectors in Australia. The National Partnership Agreement on Energy Efficiency ensures cooperation in this field between the federal, state and territory governments. The strategy provides a coordinated and nationally consistent approach to energy efficiency, and encompasses many individual measures within four key areas: assisting households and businesses in the transition to a low-carbon future; reducing impediments to the uptake of energy efficiency measures; making buildings more energy efficient; and the Government working in partnership and leading the way.

52. Australia reports on many PaMs in the area of energy efficiency in the NC6. These include the Commercial Building Disclosure Program, the National Construction Code, Energy Efficiency in Government Operations, Energy Efficient Appliances and Equipment, and the inefficient incandescent lighting phase-out programme. While some of the energy efficiency programmes reported in the NC6 have expired or been closed, they still contribute to GHG emission reductions.

53. ***Residential and commercial sectors***. GHG emissions from the residential and commercial sectors increased by around 36 per cent between 1990 and 2012, mainly as a result of population growth and income growth. Emissions for these sectors amounted to 2.0 per cent of total GHG emissions in 2012. Australia has a variety of measures in place to address energy efficiency in the residential and commercial sectors (see table 4), many of which are rooted in the National Strategy on Energy Efficiency (see para. 52 above).

54. ***Transport sector***. Emissions from the transport sector are among those that have increased the most in Australia. Between 1990 and 2012, GHG emissions increased by 49.7 per cent, leading to a 16.6 per cent share of emissions from transport in the total GHG emissions in 2012. The main driver of the increase in emissions from transport is the continuing growth in the number of vehicles owing to the growth in population, as well as the growth in household income.

55. Australia has a limited number of PaMs addressing the transport sector reported in the NC6 that focus mostly on providing information: the Green Vehicle Guide (a web tool to help consumers make well-informed decisions with regard to performance of new vehicles); Fuel Consumption Labelling; and Smart Travel (Western Australia). The plan to include heavy on-road liquid fuel use in the ETS is no longer relevant due to the repeal of the ETS. During the review, Australia informed the ERT that a methodology for transport projects under the ERF is currently under development. Given the significance of transport emissions to the total GHG emissions of Australia and the projected increasing trend, the ERT suggests that Australia report the result of the ERF methodology development and, if possible, the expected effect in its next NC submission.

56. ***Industrial sector***. GHG emissions from energy use in manufacturing industries and construction increased by 12.4 per cent between 1990 and 2012, amounting to 7.3 per cent of the total GHG emissions in 2012.

57. The industrial sector is covered by some of the PaMs addressing energy efficiency, such as the Energy Efficiency Opportunities programme. Under this programme legislation,

which came into effect in July 2006, companies must undertake a rigorous and comprehensive assessment of their energy use to identify cost-effective energy efficiency opportunities, and report to the Australian Government and the public on their business response. However, this programme was repealed in September 2014. It is expected that emission reductions from this sector will be covered by the ERF in future.

4. Policies and measures in other sectors

58. ***Industrial processes***. The GHG emissions from the industrial processes sector increased by 26.5 per cent between 1990 and 2012, amounting to 5.7 per cent of the total GHG emissions in 2012. The increase in emissions from industrial processes is mainly owing to an increase in emissions from the use of HFCs in refrigeration and air-conditioning equipment as a replacement for CFCs controlled under the Montreal Protocol.

59. The NC6 describes some PaMs for industrial processes: the Clean Technology Program; Synthetic GHG equivalent carbon price; and the Destruction Incentives Program. The expected abatement effects of these PaMs were not included in the NC6. All these PaMs have been repealed and the sector is to be covered by the ERF. Existing measures for synthetic GHGs, including restrictions on gas acquisition, minimum handling standards, emission bans and product stewardship requirements, will remain. A review of the Ozone Protection and Synthetic Greenhouse Gas legislation is under way, which will identify options to streamline administration and reduce emissions of GHGs. The ERT considers that it is of great importance that Australia, in future submissions, provide information on projects under the ERF, if any, that address emissions from industrial processes.

60. ***Agriculture***. Between 1990 and 2012, GHG emissions from the agriculture sector increased by 1.0 per cent (853.84 kt CO_2 eq). The CFI, a voluntary carbon offsets scheme that was legislated in 2011, is the main mitigation policy for the "land sector" that comprises the agriculture (paras. 62 and 63 below), forestry (para64 below) and waste sectors (para. 66 below). The aim of this initiative is to deliver emission reductions, with the scale of these reductions depending on the approval of relevant offsetting methodologies. Under CFI, farmers and land managers are able to generate credits for activities undertaken on their land that lead to reductions in carbon emissions or increase the removal of carbon from the atmosphere. In the future, CFI is expected to be integrated into ERF.

61. The NC6 only contains a very general description of the activities in agriculture currently covered by CFI. During the review, the Party informed the ERT of the current accepted methodologies in agriculture in relation to relevant activities, namely: (i) the destruction of CH_4 generated from dairy manure in covered anaerobic ponds; (ii) the destruction of CH_4 from piggeries using engineered biodigesters; (iii) the destruction of CH_4 generated from manure in piggeries; (iv) the reduction of GHG emissions from beef cattle through feeding nitrate-containing supplements; (v) the reduction of GHG emissions in milking cows through feeding dietary additives; and (vi) the reduction of emissions from savannah burning.

62. The ERT notes the importance of mitigation PaMs in this sector due to the sector's high share of emissions, and the innovative character of CFI and its potential to reduce GHG emissions from agriculture. The ERT recommends that Australia describe the specific activities included under CFI/ERF for agriculture in its next NC submission, including the number of credits generated for each project type. Furthermore, the ERT suggests that Australia describe how it assures that the changes in emission levels due to CFI/ERF projects are captured by the national GHG inventory. In addition, the ERT suggests that Australia report on any major PaMs other than CFI/ERF that are implemented at the federal, state or local level.

63. ***LULUCF***. The LULUCF sector was a net source of 15,160.88 kt CO_2 eq in Australia in 2012, and net GHG emissions decreased by 115,360.66 kt CO_2 eq since 1990. The levels of emissions and removals from the LULUCF sector are primarily due to the decline in emissions from deforestation (forest land converted to cropland and grassland) resulting from changing economic conditions in the farm sector and other factors including regulatory changes to domestic vegetation management frameworks, with inter-annual fluctuations in emissions mainly caused by climate variability and natural disturbances, which tend to mask other underlying patterns in the sector. For some activities, these patterns are directly associated with human-induced activities, such as afforestation, reforestation and deforestation. Although the net emissions/removals from the sector fluctuate significantly, the net emissions in 2012 were 88.4 per cent lower than in 1990 and 1991.

64. The NC6 only contains a very general description of the activities currently covered by CFI. During the review, the Party informed the ERT of the current accepted methodologies and relevant activities in the LULUCF sector under CFI, namely: (i) the sequestration of carbon in soils in grazing systems; (ii) environmental plantings; (iii) human-induced regeneration of a permanent even-aged native forest; (iii) measurement-based methods for new farm forestry plantations; (iv) native forest protection (avoided deforestation); (v) quantification of carbon sequestration by permanent plantings of native mallee eucalyptus species using the CFI reforestation modelling tool; (vi) reforestation and afforestation; and (vii) reforestation by environmental or mallee plantings. The ERT recommends that Australia describe the specific activities included under CFI/ERF for the LULUCF sector in the next NC and BR submissions, including the number of credits generated for each project type. Furthermore, the ERT suggests that Australia describe how it is assured that the changes in emission levels due to CFI/ERF projects are captured by the national GHG inventory. In addition, the ERT suggests that Australia report on any major PaMs other than CFI/ERF that are implemented at the federal, state or local level.

65. ***Waste management***. Between 1990 and 2012, GHG emissions from the waste sector decreased by 31.2 per cent (5,320.65 kt CO_2 eq). These decreases reflect the result from two countervailing trends: increases stemming from the growing population and industrial production, and decreases stemming from the increase in CH_4 recovery.

66. The NC6 only contains a very general description of the activities currently covered by CFI in the waste sector. During the review, the Party informed the ERT of the current accepted methodologies and relevant activities in the waste sector under CFI, namely: (i) the avoidance of emissions by diverting waste from landfill to process engineered fuel manufacture; (ii) the avoidance of emissions by diverting waste from landfill through a composting technology; (iii) the capture and combustion of landfill gas; (iv) the capture and combustion of CH_4 in landfill gas from legacy waste; (v) the diversion of waste to an alternative waste treatment facility; and (vi) the provision of enclosed mechanical processing and composting alternative waste treatment facilities. In particular, the capture and combustion of landfill gas have been implemented in many landfills.

67. The waste sector accounts for nearly half the projects under CFI and 68 per cent of the credits issued. The ERT recommends that Australia describe the specific activities included under CFI/ERF for the waste sector in the next NC and BR submissions, including the number of credits generated for each project type. Furthermore, the ERT suggests that Australia describe how it is assured that the changes in emission levels due to CFI/ERF projects are captured by the national GHG inventory. In addition, the ERT suggests that Australia report on any major PaMs other than CFI/ERF that are implemented at the federal, state or local level.

5. Policies and measures related to implementation of commitments under the Kyoto Protocol

68. Australia reported on its package of PaMs adopted, implemented and elaborated in achieving its commitment under the Kyoto Protocol.

69. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs regarding how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. The ERT notes that in the NC5, this information was also missing and Australia was recommended to include it in the NC6.

70. During the review, Australia provided information related to how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. The activities undertaken by Australia include: impact assessments (such as extensive stakeholder engagement in the development of the Emissions Reductions Fund Green Paper and White Paper); engagements in international platforms (such as the UNFCCC forum on the impact of response measures to improve understanding of positive and negative impacts and let countries raise concerns and suggest ways to minimize adverse impacts); support to vulnerable countries (through building resilience to climate-related shocks and manage climate change impacts in ways that support economic development); support to developing countries (to prepare for the global shift to lower emissions economies, for example, through initiatives such as the Australia–China Joint Coordination Group on Clean Coal Technology, International Renewable Energy Agency and Global Methane Initiative); and Australia's Aid for Trade programme (to help developing countries reduce trade constraints and support their participation in the global trading system). The ERT reiterates the recommendation from the previous in-depth review that Australia include this information in its next NC submission.

71. The NC6 includes information on how Australia promotes and implements the International Civil Aviation Organization/International Maritime Organization (ICAO/IMO) decisions to limit emissions from aviation and marine bunker fuels. Australia actively supports efforts by the ICAO to address emissions from international aviation. This includes Australia serving on the High Level Group on International Aviation and Climate Change of ICAO and submitting an action plan to ICAO on the initiatives taken by the Australian Government and aviation industry to manage the aviation carbon footprint. Australia has worked closely with other countries in IMO on the development of an energy efficiency design index for new ships and an energy efficiency management plan for all ships. Australia has amended a range of national maritime acts to include these measures. The ERT commends Australia for the efforts made in achieving international progress on bunker fuels.

C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

72. In its NC6, Australia has presented comprehensive and well-organized information on projections of its GHG emissions. In addition, the NC6 provides references to source documents that include more detailed information on projections. Australia has improved the structure and enriched the content of the projections section of the NC6 compared with

the NC5. During the review, the Party provided prompt and effective responses to the requests from the ERT for additional information.

73. The 'with measures' projections scenario reported in the NC6 includes the effect of the CFI and ETS, with the latter being the main mitigation policy of Australia at the time when the NC6 was compiled. The Clean Energy Act that introduced the ETS was repealed in July 2014 and replaced by the Direct Action Plan, the centrepiece of which is the ERF. The current official projections of Australia were published in 2013. These projections were provided to the ERT during the review and are referred to hereinafter as the '2013 projections' scenario. This scenario does not include the mitigation effect of CFI and the new measures under the Direct Action Plan, which currently comprises the main mitigation policy of Australia to reach the 2020 targets. The mitigation effect of these policies has not yet been estimated and will depend on the final design of all elements of the ERF, which will be settled in 2015. It will also be influenced by the methods and the projects that come forward to auction under them. It is anticipated that the first auction under the ERF will be held in 2015. As such, the ERT could not assess whether the targets could be reached by Australia (see para. 98 below).

1. Projections overview, methodology and key assumptions

74. The GHG emission projections provided by Australia in the NC6 include 'with carbon price' and 'without carbon price' scenarios until 2030, presented relative to actual inventory data for 1990, 1995, 2000, 2005 and 2011. The 'with carbon price' emission projection corresponds to the 'with measures' scenario required by the UNFCCC reporting guidelines on NCs. The 'without carbon price' projection of emissions refers to the level of emissions that would have occurred in the absence of the ETS and CFI. Both the 'with carbon price' and the 'without carbon price' projections incorporate a range of existing PaMs such as RET and energy efficiency measures.

75. In the NC6, projections are presented on a sectoral basis, using the same sectoral categories used in the PaMs section and on a gas-by-gas basis for all GHGs: CO_2, CH_4, N_2O, perfluorocarbons (PFCs), HFCs and sulphur hexafluoride (SF_6) (treating PFCs and HFCs collectively in each case). Projections are also provided in an aggregated format for each sector, as well as for a national total, using global warming potential (GWP) values from the Second Assessment Report (AR2) of the Intergovernmental Panel on Climate Change (IPCC). Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and not included in the totals.

76. The ERT noted that the NC6 includes all of the information related to projections required by the UNFCCC reporting guidelines on NCs, with the exception of the total effect of implemented PaMs for the years before 2020 and the disaggregation of the total effect of implemented PaMs per gas for 2020. This information was presented by the Party during the review. The ERT recommends that Australia report the total effect of implemented PaMs in accordance with the UNFCCC reporting guidelines on NCs in its next NC.

77. Australia has an ongoing programme coordinated by DOE to update and improve the accuracy of its GHG emission projections on an annual basis. The projections are prepared on a sectoral basis using different model approaches, and the results are then combined to estimate the projections for the whole economy. The projections reported in the NC6 were prepared in 2012.

78. The 'with carbon price' and 'without carbon price' projections described in the NC6 were in accordance with the Australian Government's policies as of October 2012. The projections reflected the mitigation effects from implemented PaMs in the various sectors of the economy, but did not incorporate recent policy changes for the year 2013. The

LULUCF sector projections were estimated based on both the Kyoto Protocol accounting rules and on the UNFCCC reporting guidelines on NCs.

79. The ERT noted that it is not clear in the NC6 how the effects of RET and energy efficiency measures were included in the projections. During the review, Australia informed the ERT that when preparing projections, electricity generation from RET has been assumed to stay on an increasing trend to 2020 to reach the target level of 41,000 GWh by 2020 (see para. 49 above) and then remain stable thereafter until 2030. For reflecting the effect from energy efficiency, an autonomous energy efficiency improvement (AEEI) parameter was used, which specifies the rate of annual improvement in energy efficiency. The AEEI parameter is assumed to be 0.5 per cent per year. The ERT recommends that the Party improve the transparency of its reporting of the projections scenarios by specifying how RET and energy efficiency measures are modelled in its next NC submission.

80. The '2013 projections' scenario does not take account of the CFI and ETS, which has been repealed, and the policy measures currently being finalized within the Government's Direct Action Plan. However, it does include the historical and ongoing abatement from a range of PaMs that have been in place up to 2013. The model incorporated historical emission data for 1990–2012 from Australia's National Greenhouse Accounts.[7] A base year of 2012 applies to all sectors other than the waste sector and the LULUCF sector, where a base year of 2011 is used.

81. The ERT considers it important that Australia present in its next NC projection scenarios that take into account important developments in the field of climate policy such as: (i) the main mitigation policy of Australia, reported in the NC6, was the ETS, which has been repealed and replaced mainly by ERF; (ii) in 2014, a review of the RET scheme took place. As of early 2015, the Government is negotiating changes to the RET scheme with its Parliamentary counterparts and that any change to the legislated targets would affect the projected emissions for 2020 and 2030; (iii) the emission trends of historical years, according to the latest available GHG inventory data (included in Quarterly Update of AUS National GHG Inventory: March 2014), present some inconsistencies compared with the trends of projected emissions included in the '2013 projections' scenario. For example, according to the Quarterly Update, the total emissions were decreased by 1.1 per cent in the 2013–2014 projection year (i.e. March 2013–March 2014) compared with the 2012–2013 projection year (i.e. March 2012–March 2013), while the projected emissions according to the '2013 projections' scenario is estimated to increase during the same period.

82. During the review, Australia replied that the '2014 projections' have yet to be released and are currently planned to be released in the first quarter of 2015.

83. In the NC6, sectoral emission projections use a mix of computable general equilibrium and partial equilibrium models and sector-specific models. For some sectors, emission projections are undertaken in-house by the Australian Government using publicly available data and data obtained from external consultants. The modelling centres on two top-down computable general equilibrium (CGE) models developed in Australia: the Global Trade and Environment Model and the Monash Multi-Regional Forecasting model. These whole-of-economy models capture interactions between different sectors of the economy and among producers and consumers. Several bottom-up sector-specific models are also used to complement the CGE models.

[7] National Greenhouse Gas Inventory, released April 2013, and estimates from Quarterly Update of Australia's National Greenhouse Gas Inventory, March Quarter 2013, released in October 2013.

84. Given the importance and inherent uncertainty about the evolution of the electricity generation sector, two detailed bottom-up models of the sector were used that were developed by different groups, in order to analyse the inherent uncertainty of the economic modelling. The road transport sector was modelled using a partial equilibrium model, the Energy Sector Model, with detailed transport sector representation. CGE modelling was applied for the rest of the transport sector. The potential for abatement under the CFI scheme for the agriculture, land-use change and waste sectors was analysed based on a top-down approach using marginal abatement cost curves constructed to be in accordance with previously published bottom-up estimates.

85. The ERT noted that the modelling approach was improved compared with that used in the NC5. For example, projections of fugitive emissions were prepared by a new oil and gas bottom-up model developed in-house, and projections of the LULUCF sector were by a revised in-house model to take account of new land clearing observations, updated estimates of long-term average biomass densities and the effect of the farmers' terms of trade on land clearing. The ERT is of the view that the capacity and institutional arrangements related to the preparation of projections of Australia ensure the high quality of projection scenarios and their ongoing improvement.

86. In its NC6, Australia provided a detailed qualitative description of the factors and activities influencing projections, the analytical approach followed and the key assumptions per sector. The key factors behind the growth of projections for stationary energy emissions are: income, GDP and population growth; and growth of the coal mining and liquefied natural gas (LNG) industries for domestic use and export. The ongoing improvement in energy efficiency and changes in the fuel mix (including greater use of natural gas and RES) is estimated to moderate the growth in emissions. The growth of transport sector emission projections is due to growth in income, GDP, population and bulk commodity production. The expected growth in emissions from the transport sector is estimated to be moderated by changes in the mix of vehicles to smaller cars and fuel efficiency improvements. Fugitive emissions are influenced by the increasing level of coal production and the strong anticipated growth of the LNG industry. Emission projections for the industrial processes sector are driven by the anticipated strong production growth in the chemical industry and the growth in demand for products and equipment that require halocarbons and SF6. The key driver of the emission projections for the agriculture sector is the growth in the demand for Australian agricultural commodities in relation to income and population growth in Australia and export countries. The main factors influencing emission projections for the waste sector are population growth, rates of waste generation, waste diversion and CH4 capture. Finally, the emission/removal projections for the LULUCF sector are influenced by the terms of trade of farmers, state-based land clearance laws, the Australian dollar exchange rate and the international price of harvested wood products.

87. The ERT noted that the description of the factors and key assumptions behind projections scenarios was only qualitative, with the exception of the key assumptions included in common tabular format table 5 (annex A of the NC6). However, the information on such assumptions does not cover all emissions sources. During the review, Australia provided the ERT with information on the trends up to 2030 for the majority of the key underlining assumptions per sector. To provide the reader with a better understanding of the emission trends of the years 1990–2030, the ERT recommends that Australia improve transparency of its reporting by providing in its next NC submission quantitative information about the factors and key assumptions made during the modelling of projections for each sector.

88. The ERT noted that, according to the information on the trends of key assumptions that underpin the '2013 projections', the average annual GDP growth is assumed to be 3.1 per cent during the period 2013–2020 and 2.9 per cent during the period 2020–2030,

which is slightly lower than the growth for the periods 1990–2000 and 2000–2010, when GDP increased by 3.2 per cent annually on average. In comparison with other industrialized countries, Australia was not severely affected by the 2008–2009 global financial and economic crisis. Nevertheless, a considerable temporary downturn in production was noted in export-oriented manufacturing industries and primary energy production. Australia's population is expected to grow by 1.7 per cent annually from 2013 to 2020 and 1.5 per cent from 2020 to 2030, in comparison with a 1.5 per cent annual growth during the period 1990–2010.

89. The oil price (2010 AUD/barrel) is expected to reach AUD 126.2 in 2020 and AUD 172.8 in 2030. The assumed oil prices have been increased considerably from the projections reported in the NC5, where prices of USD 57 (2020) were reported, following the relevant projections of the International Energy Agency. Apart from oil prices, Australia's energy market is largely influenced by the development of world commodity prices for coal and LNG, as these energy products are mainly produced for export. Australia anticipates an important growth in both coal and LNG exports, with a continuously growing energy demand from Asian countries.

90. As part of its 'with carbon price' projections, Australia reports in its NC6 that it performed a sensitivity analysis at a sectoral and, in some cases, subsectoral level. High and low scenarios are published for all sectors[8] to provide a plausible range of emission outcomes that reflect the impact of simultaneous deviations in key variables from the modellers' best estimates. Sensitivity analysis of the impact on the projections of variations in individual key assumptions is also undertaken. Because the key assumptions vary from sector to sector, different assumptions and variables are adjusted in the sensitivity analysis across the sectors. The ERT noted, however, that the outcomes of this elaborated sensitivity analysis are not included in the NC6.

91. During the review, Australia provided an overview of the key variables and the results of the sensitivity analysis. The Party explained that the policy backdrop for the projections reported in the NC6 was that Australia's net emissions were subject to an emissions cap through the ETS. The sensitivity analysis in general showed that changes to key variables (including the carbon price) would change the share of mitigation achieved domestically and sourced overseas, but net emissions would remain the same (at the level of the cap that applied in any one year). The ERT commends Australia for the detailed sensitivity analysis of the 'with carbon price' projections and encourages Australia to report the key variables and the main results of the uncertainty analysis in its next NC submission.

2. Results of projections

92. Australia's target for the first commitment period of the Kyoto Protocol was to limit emissions to 108 per cent of the 1990 level. According to the latest inventory submitted in April 2014, Australia is expected to meet this target with domestic efforts alone. Hence, Australia is expected to overachieve its first commitment period commitments by 4.4 per cent, which is equivalent to 130,800 kt CO2 eq for the entire period. During the first commitment period, Australia did not elect any activities under Article 3, paragraph 4, of the Kyoto Protocol. The activities under Article 3, paragraph 3, for the Kyoto Protocol remained a net source during the first commitment period, amounting to emissions of 115,625.56 kt CO2 eq for the entire period. Because LULUCF constituted a net source of GHG emissions in 1990, emissions from land-use change in 1990 are included in the 1990 emissions base year (around 25 per cent of total emissions) for the purpose of the

[8] Available at <http://climatechange.gov.au/reducing-carbon/reducing-australias-emissions/australias-emissions-projections>.

calculation of the assigned amount. A key factor behind the overachievement of the target was that the average emissions from deforestation during the first commitment period (2008–2012) were about 67.0 per cent lower than the 1990 level. Australia is not planning to make use of flexible mechanisms for the first commitment period target.

93. Under the second commitment period of the Kyoto Protocol, Australia has committed to limit average annual emissions over the period 2013–2020 to 99.5 per cent of the 1990 level. Australia's Kyoto Protocol target (or quantified emission limitation or reduction objective, QELRO) is consistent with its commitment under the Convention to reduce emissions by 5 per cent on 2000 levels by 2020 (quantified economy-wide emission reduction target). Australia reported in the NC6 two more ambitious conditional targets under the Convention, which are to reduce emissions between 5 and 15 per cent or 25 per cent on 2000 levels by 2020, based on conditions relating to the extent of global action. In the second commitment period, Australia will account for emission/removals related to forest management activities under Article 3, paragraph 4, of the Kyoto Protocol (mandatory for the second commitment period), and will also elect cropland management, grazing land management and revegetation activities.

94. According to the Party's NC6/BR1, QELRO and quantified economy-wide emission reduction targets will be met through a comprehensive set of domestic emission reduction policies, including the ETS and CFI. The ETS would set 'emissions caps' to ensure that Australia meets its 2020 and Kyoto Protocol targets. According to the NC6/BR1, the ETS is forecast to allow the liable entities to use international carbon credits during the period 2015–2020, following the fixed price period (first two years). For 2020, it is estimated that 100,000 kt CO2 eq of such credits could be used.

95. In the NC6, Australia reported that the overall GHG emissions, excluding LULUCF, are expected to increase from 414.97 Mt CO2 eq in 1990 to 594.77 Mt CO2 eq in 2020 and 589.2 Mt CO2 eq in 2030, in the 'with carbon price' scenario, and to 646,000 kt CO2 eq in 2020 in the 'without carbon price' scenario. The LULUCF emissions are expected to decrease from 130.52 Mt CO2 eq in 19909 to 18.76 Mt CO2 eq in 2020 (based on Convention accounting rules). In the NC6, Australia did not provide projections of LULUCF for 2030, nor a projections scenario indicating the pathway to achieve its conditional 2020 targets under the Convention and the longer-term 2050 target, which should be directly linked with a set of additional planned PaMs. The ERT encourages the Party to report in its next submission projections for a 'with additional measures' scenario, which could indicate the trajectory of emissions, along with information about key factors and activities for meeting these targets. The 'with additional measures' scenario could be directly linked with the additional planned PaMs that would be needed to achieve the conditional 2020 target and the long-term target by 2050.

96. During the review, Australia informed the ERT that the ETS, which was reported in NC6/BR1 as the primary means by which Australia will meet its targets, has been repealed and replaced by the ERF. The Government has not yet published mitigation estimates associated with the anticipated mitigation potential of each economic sector participating in the ERF and the aggregated mitigation potential of the ERF. However, Australia mentioned that the Government strongly supports this measure and has allocated AUD 2.55 billion to the ERF, with further funding to be considered in future budgets.

97. As mentioned earlier (see para. 80 above), compared to the NC6 projections, the '2013 projections' do not include the mitigation effects of the CFI and ERF, so it can be compared to the 'without carbon price' scenario projection in the NC6. According to the

[9] This data is from the 2014 GHG inventory submission.

'2013 projections', the mitigation effort[10] of Australia for the period 2013–2020, in order to meet the Kyoto Protocol target, equals 552 Mt CO2 eq or 421 Mt CO2 eq (if Australia use the surplus from the first commitment period of the Kyoto Protocol) over the entire period. The mitigation effort is defined as the additional mitigation effort that Australia should take compared with the historical and ongoing mitigation from a range of PaMs that have been in place up to 2013, such as RET and existing energy efficiency measures. The ERT commends Australia for the detailed description and analysis of its emission mitigation effort for the years 2013–2020.

98. The information presented to the ERT during the review indicated that the achievement of the 2020 target is strongly dependent on whether the implementation of the Direct Action Plan and especially the ERF could deliver the amount of mitigation effort for the years 2013–2020 (see para. 97 above). Because there is no published information about the anticipated mitigation potential of the ERF and of each economic sector participating in the ERF, the ERT cannot assess whether the 2020 target could be achieved. The ERT considers that it is of critical importance that Australia report in its next NC submission the estimated mitigation effect of the current PaMs and provide an assessment of whether their aggregated effect is sufficient to meet its Kyoto Protocol and Convention targets.

99. According to the '2013 projections', the overall GHG emission projections (without LULUCF) will be 628,456 kt CO2 eq in 2020 and 735,936 kt CO2 eq in 2030 based on values for GWP from the AR2 of the IPCC. The increases of overall emissions (excluding LULUCF) are estimated to be 51.4 per cent in 2020 and 77.3 per cent in 2030 compared with the 1990 levels. LULUCF emissions from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are projected to reach 30 Mt CO2 eq in 2020 and 34 Mt CO2 eq in 2030.

100. In 2020, the '2013 projections' without LULUCF are approximately 18 Mt CO2 eq lower than the NC6 'without carbon price' scenario. The difference can be attributed mostly to the emissions from the electricity and energy end-use sectors, such as industry, commercial and households. According to the '2013 projections', emissions in the electricity sector by 2020 are approximately 6 Mt CO2 eq lower than the 'without carbon price' scenario of NC6, due to an expected reduction in electricity demand. The key drivers of this reduction are increasing energy prices, energy efficiency programmes, the uptake of small-scale distributed energy and high levels of hydroelectric power generation. To 2020, this trend also reflects structural changes in the economy, moving away from manufacturing to services, resulting in decreased demand from the aluminium, alumina, zinc and steel industries. In comparison with the 'without carbon price' scenario, 2020 emissions of the '2013 projections' from energy end-use sectors are projected to be 15 Mt CO2 eq lower. The recent high value of the Australian dollar and global economic conditions have led to lower levels of industrial production in emission-intensive industries, reducing projected emissions from direct combustion in 2013 and into the future.

101. By sector, according to the '2013 projections', emissions are expected to increase in all sectors compared with the 1990 levels, with the exception of the waste sector as follows: (i) energy emissions (excluding transport and fugitive emissions) by 64.4 per cent in 2020 and 94.2 per cent in 2030, due to increased electricity demand and energy end-use sectors from Australia's mineral and energy resources sectors (especially LNG); (ii) transport emissions by 63.4 per cent in 2020 and 75.3 per cent in 2030 due to activity growth in all transport subsectors; (iii) fugitive emissions by 116.3 per cent in 2020 and 175.4 per cent in 2030, due to important growth in both coal and LNG exports, with a continuously growing

[10] During the review, Australia referred to this as "abatement tasks". In this report, "mitigation effort" is used instead.

energy demand in Asian countries; (iv) industrial processes and solvents emissions by 44.9 per cent in 2020 and 77.7 per cent in 2030, due to the increased use of F-gases and the expected growth in production of ammonia and nitric acid; (v) and agriculture emissions by 7.3 per cent in 2020 and 25.3 per cent in 2030, due to expansion across all major agricultural commodities driven by global income growth that leads to increased demand for Australian agriculture exports, particularly in south-east Asia. Emissions from the waste sector are expected to decrease by 26.1 per cent in 2020 and 27.3 per cent in 2030 due to improved diversion of waste from landfill to recycling and increasing CH_4 capture.

102. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and quantified economy-wide emission reduction target are presented in table 5 and the figure below.

Table 5

Summary of greenhouse gas emission projections for Australia

	Greenhouse gas emissions (kt CO_2-eq per year)	*Changes in relation to the base year[a] level (%)*	*Changes in relation to the 1990 level (%)[b]*
Kyoto Protocol base year[c]	547 699.84	–	–
Kyoto Protocol target for the first commitment period (2008–2012)	591 515.83	8.0	–
Kyoto Protocol target for the second commitment period (2013–2020)[c]	547 765.38	–0.5	–
Quantified economy-wide emission reduction target under the Convention[c]	533 076.27	–5.0	–
Inventory data 1990[c]	414 973.70	–	-
Inventory data 2012[c]	543 648.45	–	31.0
Average annual emissions for 2008–2012[c]	542 230.70	–	30.7
'Without carbon price' projections for 2020[d]	650 000.00	–	56.6
'With carbon price' projections for 2020[d]	594 773.00	–	43.3
'2013 projections' for 2020[d]	628 456.00	–	51.4
'With carbon price' projections for 2030[d]	589 197.00	–	42.0
'2013 projections' projections for 2030[d]	735 936.00	–	77.3

[a] "Base year" in this column refers to the base year used for the targets under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target (2000).

[b] The changes in relation to the 1990 level were presented by using 1990 levels from Australia's April 2014 greenhouse gas inventory submission (without land use, land-use change and forestry (LULUCF)).

[c] The Kyoto Protocol base year level of emissions is provided in the initial review report contained in document FCCC/IRR/2007/AUS. Land-use change and forestry constituted a net source of greenhouse gas (GHG) emissions in 1990 and Australia's emissions from deforestation in 1990 are included in the 1990 emissions base year for the purpose of calculation of the assigned amount.

[a] Base year emissions used for this calculation are from Australia's 2014 GHG inventory submission.

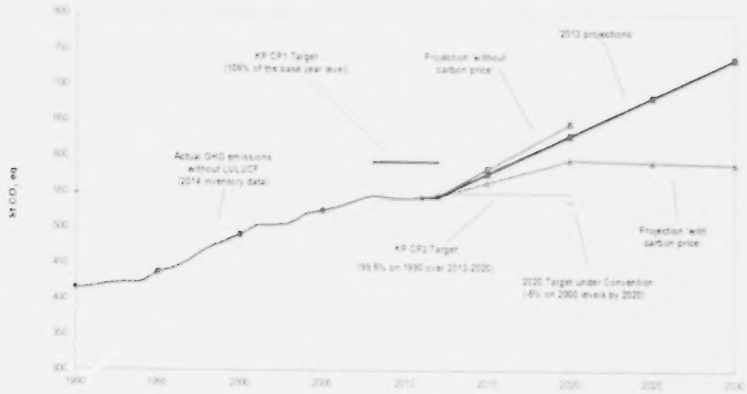
[b] Base year (2000) emissions used for this calculation are from Australia's 2014 GHG inventory submission, that include Article 3.3 activities, but not Article 3.4 activities under the Kyoto Protocol.

[c] Australia's 2014 GHG inventory submission, the emissions are without LULUCF.

[d] Australia's sixth national communication and/or first biennial report, the projections are for GHG emissions without LULUCF.

[e] Updated projections provided by the Party during the in-depth review, the projections are for GHG emissions without LULUCF.

Greenhouse gas emission projections


Mt CO2 eq
KP CP1 Target
(108% of the base year level)
Projection without carbon price
2013 projections
Actual GHG emissions without LULUCF (2014 inventory data)
KP CP2 Target
(99.5% on 1990 over 2013-2020)
2020 Target under Convention
(-5% on 2000 levels by 2020)
Projection with carbon price

Sources: (1) Data for the years 1990–2012: Australia's 2014 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry; (2) Data for the years 2013–2030: Australia's sixth national communication and/or first biennial report; the emissions are without land use, land-use change and forestry; updated projections provided by the Party during the review.

Note: The target for the second commitment period of the Kyoto Protocol is based on preliminary estimates of the base year emissions for the first commitment period of the Kyoto Protocol and quantified emission limitation or reduction objective included in annex I to decision 1/CMP.8. The initial assigned amount for the second commitment period will be established after the initial review for the second commitment period of the Kyoto Protocol. The target for the second commitment period of the Kyoto Protocol and the 2020 target under Convention, as presented in the figure, include deforestation emissions related to the respective base year.

Abbreviations: CP1 = first commitment period of the Kyoto Protocol, CP2 = second commitment period of the Kyoto Protocol, GHG = greenhouse gas, KP = Kyoto Protocol, LULUCF = land use, land-use change and forestry.

3. Total effect of policies and measures

103. In the NC6, Australia presents the expected total effect of implemented and adopted PaMs in terms of GHG emissions avoided or sequestered for 2020. The ERT noted that information is not presented in terms of GHG emissions avoided or sequestered disaggregated by gas (on a CO_2 eq basis), as required by the UNFCCC reporting guidelines on NCs. During the review, the Party provided this information. The ERT recommends that Australia report the total effect of PaMs by gas (on a CO_2 eq basis), in its next NC submission, in order to enhance the completeness of the reporting of the total effect of PaMs.

104. The total effect of PaMs is mainly estimated by comparing the projected emissions between the 'with carbon price' and 'without carbon price' scenarios. Australia reported that the ETS and CFI that form this price signal are projected to deliver emission reductions of 155 Mt CO_2 eq in 2020. In 2020, based on the NC6 projections, 55 Mt CO_2 eq of emission reduction is expected to occur domestically, including 7.2 Mt CO_2 eq achieved by CFI. The ETS is also forecast to drive the sourcing of a further 100 Mt CO_2 eq of abatement from overseas. The Australian Government is currently updating these projections, due to the repeal of the ETS and the adoption of new policies (e.g. ERF). In the NC6, Australia reported additional abatement achieved through existing PaMs not covered by the ETS, which is estimated to be 20.1 Mt CO_2 eq in 2020. This emission reduction is owing to the following policies: Queensland and New South Wales land clearing legislation; Greenhouse Gas Abatement Program Smart Travel (Western Australia); Greenhouse Friendly (Australian Government); and Greenhouse Gas Abatement Scheme (New South Wales).

105. The ERT noted that the total effect of PaMs reported in the NC6 does not demonstrate the full impact of Australia's PaMs. For example, the effect of RET and energy efficiency measures has not been identified, due to the fact that their mitigation effect was included in both the 'with carbon price' and 'without carbon price' scenarios. The ERT recommends that Australia improve the transparency of the estimation and reporting of the total effect of PaMs in the next submission of the projections, by identifying the effect of RET and energy efficiency related PaMs. The ERT is of the view that the effect of RET and energy efficiency measures could be estimated by following a bottom-up approach.

106. The ERT also noted that the total effect of PaMs is not reported separately for each sector in the NC6. During the review, the Party informed the ERT that as many measures overlap, it is hard to attribute abatement to a particular measure. The presence of an economy-wide carbon price makes attributing abatement to measures other than the carbon price a very complicated task. However, the Party provided an update of the total effect of PaMs disaggregated per sector, which cover the combined effect of the carbon price, CFI, measures in sectors not covered by the ETS and abatement in sectors covered by the ETS that are additional to those due to the carbon price commenced from 2012, particularly the RET and energy efficiency measures. The updated information was based on the scenarios included in the NC6.

107. Table 6 provides an overview of the total effect of PaMs as presented during the review. The total estimated effect of adopted and implemented PaMs is 81 Mt CO_2 eq in 2020[11] and 176 Mt CO_2 eq in 2030. According to table 6, PaMs implemented in the energy sector will deliver the largest emission reductions, followed by the effect of PaMs implemented in the LULUCF sector. The most effective PaMs and drivers behind GHG emission reductions are described in chapter II.B above.

108. The ERT further noted that Australia did not provide in its NC6 an estimate of the total effect of PaMs of historical years, which is a requirement according to the UNFCCC reporting guidelines on NCs. In response to a question raised by the ERT during the review, the Party explained that the 2010 projections of Australia, published in 2011, contained a single modelling scenario that did not include carbon pricing. According to this scenario, the total effect of PaMs was estimated to be 56 Mt CO_2 eq in 2010. The ERT is of the view that the Party may use a bottom-up approach to estimate at least the effect of PaMs related

[11] Note that while the "with carbon price" scenario corresponds to the "with policies and measure" scenario required by the UNFCCC reporting guidelines on NCs, the "without carbon price" scenario is different from the "without policies and measures" scenario that is used to derive the total effect of adopted and implemented PaMs stated here (i.e. 81 Mt CO_2 eq in 2020).

to RES, fuel switch, energy efficiency and capture of landfill gas, based on historical data from the national energy balance and national GHG inventory. The ERT recommends that Australia improve the completeness of its reporting of the total effect of PaMs by including estimations for the historical years in its next NC, according to the UNFCCC reporting guidelines on NCs.

Table 6
Projected effects of planned, implemented and adopted policies and measures in 2020 and 2030

Sector	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of planned measures (kt CO_2 eq)*	*Relative value (% of 1990 emissions)*
	2020				*2030*			
Energy (without transport)	42 000	18.5	NA		117 000	51.2	NA	
Transport	5 000	8.3	NA		14 000	23.2	NA	
Industrial processes	6 000	24.3	NA		13 000	52.7	NA	
Agriculture	1 000	1.2	NA		2 000	2.3	NA	
Land-use change and forestry	23 000	17.6	NA		25 000	19.2	NA	
Waste management	4 000	23.5	NA		5 000	29.3	NA	
Total	**81 000**	**19.5**	**NA**		**176 000**	**42.2**	**NA**	

Source: Additional material provided by Australia during the review.

Note: The total effect of implemented and adopted policies and measures presented in the table above includes the effect of the main mitigation policy of Australia at the time of the preparation of the sixth national communication (NC6), which was the emissions trading scheme. This policy was repealed in July 2014 and replaced by the Direct Action Plan, the centrepiece of which is the Emissions Reduction Fund (ERF). The mitigation effect of the ERF has not yet been quantified. There were no planned measures at the time of the NC6 projections. All measures were classified as implemented or adopted and included in the projection scenarios of the NC6.

Abbreviation: NA = not available.

4. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

109. Australia in its NC6 provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. According to the latest inventory submitted in April 2014, Australia will meet the targets of the first commitment period of the Kyoto Protocol with domestic efforts alone. Specifically, Australia expects to overachieve its first commit period commitments by 130.8 Mt CO_2 eq during the entire period.

110. Concerning the second commitment period of the Kyoto Protocol, in its NC6, the Party reported that the ETS, which was the main mitigation policy of the Party at the time of the preparation of the NC6, was forecast to allow for the use of international carbon credits during the period 2015–2020. For 2020, it was estimated that 100 Mt CO_2 eq of abatement from overseas will be used.

111. In response to a question raised by the ERT during the review, the Party provided the following definition of supplementarity with the recent policy changes: "Australia is focusing on domestic action to meet its emission reduction target, with a Direct Action Plan that will efficiently and effectively source low-cost emission reductions within Australia". Taking into account the changes of the main mitigation policies of Australia (repeal of the ETS) and the fact that the abatement potential of the ERF is not yet able to be defined, the ERT suggests that Australia provide updated information on supplementarity in its next NC, in order to reflect the recent changes of domestic GHG mitigation policies and the updated estimates about the use of flexible mechanisms under the Kyoto Protocol.

D. Provision of financial resources and technology transfer to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol

1. Finance, including "new and additional" resources and resources under Article 11 of the Kyoto Protocol

112. In its NC6, Australia provided information on provision of support required under the Convention and its Kyoto Protocol. Detailed information was provided on measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention as required by the UNFCCC reporting guidelines on NCs and under Article 11 of the Kyoto Protocol, as required by the "Guidelines for the preparation of information required under Article 7 of the Kyoto Protocol". The ERT noted that the information provided is complete and mostly transparent. The ERT commends Australia for its clear reporting on trends and patterns in its commitment of public financial flows.

113. In the NC6, Australia has indicated what "new and additional" financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention. However, the ERT noted a lack of clarity on how these "new and additional" financial resources were determined. During the review, Australia provided written explanations on how the "new and additional" financial resources were defined. Australia's budget process operates on annual appropriations. Accordingly, for the purposes of Australia's budget processes, all contributed finance in a particular financial year is "new and additional" to the finance provided in previous financial years. From the year when the NC5 was submitted to the time of the NC6 submission, Australia increased its average annual expenditure by 70 per cent. Australia contributed AUD 126.98 million in the fiscal year 2009–2010, which was prior to the fast-start finance and was still over 33 per cent more than the annual average expenditure of the NC5 reporting period. The ERT recommends that Australia include information explicitly in its next submission on how it defines its financial resources support as "new and additional".

114. The ERT also noted that some figures on the financial contribution in the NC6 are quite substantial but were not clearly specified, such as figures categorized as "global unspecified" in table 7.2c of the NC6. During the review, Australia provided further information on the breakdown of the total amount of financial contribution during the reporting period and explanation of some of the unspecified figures contained in table 7.2 in its NC6. The ERT recommends that Australia improve the transparency of its reporting in its next submission.

115. Australia has contributed approximately AUD 490 million of "new and additional" support for the purpose of its provision on financial resources and technology cooperation specifically for climate change since the submission of the NC5 up to mid-2012. The contribution was grant based, sourced from the broader aid budget, was appropriately balanced between mitigation and adaptation activities and was delivered through

multilateral and bilateral channels. Australia also reported that the three-year fast-start finance concluded at the end of the 2012–2013 fiscal year. The fast-start commitment of Australia totalled AUD 599 million.

116. Australia provided detailed information on its financial resources related to the implementation of the Convention provided through multilateral channels. The total provision of public financing amounted to about AUD 74.09 million during the fiscal year 2009–2010, AUD 64.16 million during 2010–2011 and AUD 65.64 million during 2011–2012.

117. In terms of financial flows to the Global Environment Facility (GEF), Australia reported that it provided AUD 62.50 million to the GEF. Climate change allocations are estimated to be 33 per cent of the GEF funding.

118. Regarding the allocation of financial resources through bilateral and regional channels, the total provision of public financing amounted to about AUD 52.89 million in the fiscal year 2009–2010, AUD 96.25 million in 2010–2011 and AUD 138.64 million in 2011–2012. Most of those resources were allocated to the Asia–Pacific region, in particular to the Pacific Island countries.

119. Australia has reported information on the assistance it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects. The financial resources were mainly delivered by its contribution to the Least Developed Country Fund and the International Climate Change Adaptation Initiatives that focused on the Pacific region. Table 7 summarizes information on financial resources and technology transfer.

Table 7

Summary of information on financial resources and technology transfer for 2009–2012

(Millions of Australian dollars)

Allocation channel of public financial support	*Years of disbursement*		
	2009–2010	*2010–2011*	*2011–2012*
Official development assistance (millions of USD)[a]	3 864.40	4 301.70	4 822.30
Contributions through multilateral channels, including:	74.09	64.16	65.64
Contributions to the Global Environment Facility	5.74	7.43	7.46
Contributions through bilateral and regional channels	52.89	96.25	138.64
Contributions through United Nations bodies	0.80	0.87	0.84
Contributions to the Green Climate Fund			0.50

[a] Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

2. Technology transfer, including information under Article 10 of the Kyoto Protocol

120. Australia has provided in its NC6 detailed information on activities related to technology cooperation, which contains many pieces of relevant information on the transfer of technology and notable activities undertaken by the public and private sectors. A detailed review of reported information is provided in chapter II.D.3 of the report of the in-depth review of the first biennial report.

121. The ERT noted that Australia does not follow strictly the outline contained in the annex to the UNFCCC reporting guidelines on NCs, as it did not use the titles of the sections provided in the outline (i.e. financial resources and transfer of technologies). Instead, the title "Financial resources and technology cooperation" was used in the NC6. The ERT also noted that the information reported in the NC6 is related to general

technology cooperation and lacks specific distinctions between general technology cooperation and measures specifically related to the promotion, facilitation and financing for the transfer of, and access to, climate-friendly technology in developing counties. During the review, Australia provided more specific information on how these technology cooperation activities have addressed the issue of technology transfer to developing countries. The ERT recommends that Australia follow the outline provided in the UNFCCC reporting guidelines on NCs, in order to improve the transparency of its reporting and provide distinct information on technology transfer to developing countries from the information on its activities on boarder technology cooperation.

122. In the NC6, Australia has reported in textual format on the steps taken by governments to promote, facilitate and finance the transfer of technology, and to support the development and enhancement of the endogenous capacities and technologies of developing countries. Australia also reported its activities for financing access by developing countries to 'hard' or 'soft' environmentally sound technologies. These are done mainly through Australia's engagement in many technology cooperation activities multilaterally and bilaterally, which include the Global Carbon Capture and Storage Institute, the Clean Energy Ministerial (a forum for international collaboration on clean energy), the International Renewable Agency, the International Partnership for Energy Efficiency Cooperation, the International Energy Agency Technology Network, the Climate Technology Initiative, the Australia–China Joint Coordination Group on Clean Coal Technology and the Australian Centre for International Agricultural Research. However, the NC6 does not include information on success and failure stories related to technology transfer. The ERT recommends that Australia provide, where feasible, information on success and failure stories in its next submission, using table 6 of the UNFCCC reporting guidelines on NCs.

E. Vulnerability assessment, climate change impacts and adaptation measures

123. In its NC6, Australia has provided the required information on the expected impacts of climate change in the country and on adaptation options. Table 8 summarizes the information on vulnerability and adaptation to climate change presented in the NC6. Australia's adaptation activities across all levels of government are backed by the National Climate Change Adaptation Framework. Eight national priority areas for climate change adaptation have been agreed by the COAG Select Council on Climate Change: water resources; coastal regions; biodiversity; agriculture, fisheries and forestry; human health; tourism; settlements, infrastructure and planning; and natural disaster management.

124. Climate system observations and impacts since Australia's NC5 underscore the need for a coherent adaptation framework that focuses the efforts of all parts of Australian society — all levels of government, business and the wider community. Substantial foundation work has been developed under the National Climate Change Adaptation Framework to help with the transition to embed the insights of adaptation into core government, business and community practices. In 2010, a national vision and policy framework for adaptation was outlined in *Adapting to Climate Change in Australia — an Australian Government Position Paper*. Following that, the Productivity Commission completed an inquiry into barriers to effective climate change adaptation in 2012. In 2013, the Australian Government released its *Climate Adaptation Outlook: a Proposed National Adaptation Assessment Framework*.

125. Australia's Regional Natural Resource Management Planning for Climate Change (NRM) works with a diverse group of stakeholders to plan and deliver integrated strategies to improve landscape connectivity, function and resilience, drawing on biophysical,

socioeconomic and climate information. It functions at a catchment or landscape scale, across sectors, property boundaries and land tenures, and plays a significant role in enabling communities to adapt to climate change impacts.

126. During the review, the ERT took note of Australia's key achievements with regard to adaptation. These include: the delivery of 144 National Climate Change Adaptation Research Facility projects; the Intergovernmental Agreement on Implementing Water Reform in the Murray–Darling Basin; and the review of Natural Disaster Relief and Recovery Arrangements. Some of the funding allocated to the National Coastal Climate Risk Framework will be used to develop a framework for coastal risk management.

127. Through the International Climate Change Adaptation Initiative, Australia provided AUD 328.2 million over five years to deliver policy and technical assistance to multilateral institutions, and targeted assistance through bilateral partnerships with developing countries.

128. The ERT commends Australia for the transparent and complete information provided on its actions relating to vulnerability assessment, climate change impacts and adaptation measures.

Table 8
Summary of information on vulnerability and adaptation to climate change

Vulnerable area	*Examples comments adaptation measures reported*
Agriculture and food security	*Vulnerability*: drought and extreme events cause strain to the agricultural industry *Adaptation*: the Climate Change Research Program is: testing the responses of key Australian crops to increases in temperature and CO_2; monitoring ways to manage heat stress in livestock; examining potential new shrub-based forages for livestock; and evaluating the relocation of various crops to northern Australia
Biodiversity and natural ecosystems	*Vulnerability*: iconic natural systems, such as Kakadu National Park and the Great Barrier Reef, will be exposed to multiple impacts *Adaptation*: the Australian Government is investing more than AUD 2 billion in complementary natural resource management programmes over the next four years to protect and manage Australia's important environmental assets and productive landscape. These programmes include: the National Landcare Programme, including the 20 Million Trees Programme and a suite of other election commitments; the Green Army programme; the Reef 2050 Plan; Working on Country and continuing investment through the Land Sector Package
Coastal zones	*Vulnerability*: with approximately 35,000 km of coastline and approximately 85 per cent of its population living within the coastal zone, Australia will be vulnerable to the impact of sea level rise (e.g. coastal inundation, erosion, loss of wetlands and saltwater intrusion into freshwater sources) *Adaptation*: an agreement to develop a set of best practice principles and approaches for planning to manage climate change risks in the coastal zone, including guidance on a range of options such as risk-based land zoning, mandatory risk disclosure, setback provisions, conditional development approvals, use of protective structures and changes to building codes and design standards
Drought	*Vulnerability*: drought, the most pervasive of these extremes, disrupts cropping, reduces stock numbers and erodes the resource base of farms *Adaptation*: in response to the national review of drought policy, the Government invested AUD 81 million in a pilot of drought reform

Vulnerable area	*Examples/comments adaptation measures reported*
	measures to better support farmers, their families and rural communities in preparing for future challenges
Fisheries	*Vulnerability*: there is evidence of extensive southward movement of tropical fish and plankton species in south-east Australia; declines in abundance of temperate species and signs of the effect of ocean acidification on marine species with shells *Adaptation*: the National Climate Change Action Plan for Fisheries and Aquaculture provides fishing industry workers, managers and researchers with a broad, principles-based response framework in which responses appropriate to the diverse needs of various fisheries are developed
Forests	*Vulnerability*: predicted increase in the risk of bush fires *Adaptation*: funding research to develop diagnostic tools and techniques to determine when (and what) specific management intervention is required to respond to the threats and opportunities of climate change. These include research on options to mitigate the predicted increase in bush fire risks, and testing and advancing biosecurity preparedness with regard to major forest pests
Human health	*Vulnerability*: projected increase in the occurrence and severity of heatwaves, which could cause heat exhaustion, heat stroke and sometimes death *Adaptation*: funding research to develop early warning systems and to understand the spread of climate-related diseases and adaptation through urban planning
Infrastructure and settlements	*Vulnerability*: the high-end scenario of sea level rise of 1.1 m by 2100 would potentially expose more than AUD 226 billion in commercial, industrial, road and rail, and residential assets to inundation and erosion hazards *Adaptation*: the Australian Building Codes Board completed a review of possible modifications to the Building Code that takes into account adaptation measures for climate change. Also, the *Australian Rainfall and Runoff* handbook is developed as the primary source of technical information to design infrastructure that can withstand the impacts of extreme rainfall, flooding and storm surge
Water resources	*Vulnerability*: significant reductions in surface water availability, particularly in south-west and south-east Australia *Adaptation*: the Water for the Future Programme assists in: improving the efficiency of irrigation systems to minimize water loss; developing a robust water market; investing in alternative water supplies and water-saving initiatives in urban areas; and improving the quality of national water information systems

F. Research and systematic observation

129. Australia has provided information on its actions relating to research and systematic observation, which addressed both domestic and international activities. The ERT took note of the significant progress made by Australia, since the NC5, in coordinating the delivery of climate change science needed to inform mitigation and adaptation policies and to help shape a global solution to climate change.

130. The ERT took note of Australia's leading research institutions, programmes and key findings on actions related to research and systematic observation. For instance, the

Commonwealth Scientific and Industrial Research Organisation is leading research into understanding how the global climate system works. The Bureau of Meteorology provides national observational, meteorological, hydrological and oceanographic services and undertakes research in support of its operations. The universities sector is largely represented through the Australian Research Council Centre of Excellence for Climate System Science, which focuses on cutting-edge research to inform the development of the Australian Community Climate and Earth-System Simulator (ACCESS).

131. The Australian Climate Change Science Program (ACCSP) continues to deliver critical information to improve understanding of the causes, nature, timing and consequences of climate change for Australia and the region. This core programme has informed key policy decisions (including mitigation targets and adaptation strategies to manage the risks of climate change) and international negotiations on climate change. Through the National Collaborative Research Infrastructure Strategy, the Super Science Initiative and the Collaborative Research Infrastructure Scheme, Australian has invested in projects to improve its research capacity. This includes maintaining Australia's contribution to the Global Climate Observing System through activities such as the Integrated Marine Observing System and the Terrestrial Ecosystem Research Network, and the investment of AUD 120 million to construct a new marine research vessel capable of exploring Australia's vast ocean territory.

132. National programmes (such as ACCSP), as well as computation and communication systems (e.g. the National Computation Infrastructure and the Australian National Data Service) are in place to support research and systematic observation.

133. The Australian Government also implemented the NRM fund to generate regional-level climate change information to support natural resource management planning. This involves the development, coordination and delivery of a new suite of regional climate projections for Australia.

134. In addition, Australia's climate change scientists made valuable contributions to global climate change research. Since the NC5, 46 Australian scientists have acted as authors and editors on IPCC reports, including the Fifth Assessment Report. For example, simulations from ACCESS were submitted to the Coupled Model Intercomparison Project Phase 5 and used in the IPCC Fifth Assessment Report. ACCESS simulations have scored in the upper rank of international climate models, both within Australia and globally.

135. The ERT commends Australia for the complete and transparent information provided on its actions relating to research and systematic observation, as well as its support to international communities and in building the capacity of developing countries. The ERT encourages Australia to continue with the practice.

G. Education, training and public awareness

136. In the NC6, Australia has provided information on its actions relating to education, training and public awareness, at both the domestic and international level. Compared to the NC5, the Party provided the same level of extensive information on its key actions in this area. Australia undertook extensive community engagement to explain its vision for a clean energy future and actions to combat climate change. This includes a public awareness campaign to coincide with the launch of the Clean Energy Future Plan, consisting of television and radio advertising, direct mail and a highly detailed online presence. Australia also established a Climate Commission to provide an independent and reliable source of information about climate change science, economics and international action. However, the Climate Commission was abolished in 2013, and a separate Climate Council now performs this role independently.

137. According to Australia, thousands of Australians have attended the Climate Commission community forums around the country since their inception and accessed their high-quality publications on a range of important climate change issues. Across Australia, a range of information, education and training measures have been implemented for specific sectors. A key example is the farmer and land manager programmes that optimize participation in CFI and develop new abatement opportunities on the land.

138. The states and territories have helped households tackle climate change by being proactive in undertaking vulnerability assessments to inform the development of holistic adaptation policies. Schools and universities have promoted climate innovation, such as teaching children about sustainability, and have involved them in activities offered by the National Solar Schools and activities such as CarbonKids, which provide hands-on learning.

139. Targeted programmes have also been put in place for small and large businesses, households and local government. In the formal education sector, the federal and state governments have implemented a range of climate change education programmes for primary, secondary and tertiary students, and vocational measures for tradespeople and professionals. During the review, the Party informed the ERT that campaigns and information programmes have been put in place to help relevant industries prepare for participation in the newly created ERF, and that non-governmental organizations (NGOs) were also advocating this far-reaching change in the climate policy.

140. Internationally, the Australian Government has continued to invest in measures to assist developing countries to build their skills and knowledge base in addressing climate change challenges. This includes giving small island developing States a stronger voice, and promoting climate action through bilateral partnerships.

141. The ERT commends Australia for the transparent and complete information provided on its actions relating to education, training and public awareness. The ERT encourages Australia to continue with the practice.

III. Summary of reviewed supplementary information under the Kyoto Protocol

A. Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

142. Supplementary information provided by Australia under Article 7, paragraph 2, of the Kyoto Protocol in its NC6 is mostly complete and mostly transparent. The supplementary information is placed in different sections of the NC6. Table 9 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol, as well as references to the NC6 chapters in which this information is provided.

143. Australia has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: information on what efforts Australia is making to implement PaMs in such a way as to minimize adverse effects, including the effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention; and a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and sustainable use of natural resources. The missing information was provided to the ERT during the review. The technical assessment of the information reported under Article 7, paragraph 2, of the Kyoto Protocol is contained in the

relevant sections of this report. The ERT recommends that Australia include these reporting elements in its next NC.

Table 9
Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	*Reference to the sixth national communication*
National registry	Chapter 3.4
National system	Chapter 3.3
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 5
Policies and measures in accordance with Article 2	Chapter 4
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapters 3, 4 and 5
Information under Article 10	Chapters 6, 7, 8 and 9
Financial resources	Chapter 7

B. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

144. Australia reported the information requested in section H, "Minimization of adverse impacts in accordance with Article 3, paragraph 14", of the annex to decision 15/CMP.1 as a part of its 2013 annual submission. During the review, Australia provided the ERT with the additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be complete and transparent.

145. The 2014 and previous national inventory reports and the additional information provided during the review presented several initiatives of Australia aimed at minimizing adverse impacts, including actions and initiatives with regard to: carbon capture and storage, in cooperation with many developed and developing countries; the Carbon Sequestration Leadership Forum, where Australia is actively involved in the capacity-building programme; the Australia–China Joint Coordination Group on Clean Coal Technology; the Asia Pacific Economic Cooperation Expert Group on Clean Fossil Energy; the Asia Pacific Partnership on Clean Development and Climate; the Global Methane Initiative; and Australia's Aid for Trade programme (to help developing countries reduce trade constraints and support their participation in the global trading system).

146. The ERT commends Australia for providing this information, and encourages Australia to continue with this practice.

IV. Conclusions and recommendations

147. The ERT conducted a technical review of the information reported in the NC6 of Australia according to the UNFCCC reporting guidelines on NCs. The ERT concludes that the NC6 provides a good overview of the national climate policy of Australia at the time of submission. The information provided in the NC6 includes most elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of

information on: what efforts Australia is making to implement PaMs in such a way as to minimize adverse effects, including the effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention; and a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and sustainable use of natural resources. During the review, Australia provided additional information on these reporting elements.

148. Australia's emissions for 2012 were estimated to be 31.0 per cent above the 1990 level excluding LULUCF and 2.4 per cent above including LULUCF. The overall emission trend is defined by a significant growth in emissions from energy that is almost entirely offset by the decrease in the net emissions from LULUCF. Emission increases were owing to strong economic and population growth, a continued reliance on fossil fuels for primary energy supply and growing commodity exports. These factors outweighed improvements in the efficiency of energy supply and use. For the LULUCF sector, the emissions have decreased considerably, due to lower rates of deforestation compared to the rates from the 1990s.

149. The main PaM reported in the NC6 was the 2011 Clean Energy Act, which introduced the carbon pricing and the ETS as innovative approaches to deliver emission reductions that aimed to put Australia on the path to attain its 2020 target under the Convention and the Kyoto Protocol target for the second commitment period. This has been repealed and replaced with the Direct Action Plan, the centrepiece of which is the ERF. At the time of publication of this report, the implementing legislation for the ERF had commenced (from 13 December 2014). A total amount of AUD 2.55 billion has been allocated to the ERF to provide incentives for emission reductions across various sectors through an auction scheme. At the time of the review, there was no information available on the expected mitigation effect of the ERF and, as such, it was not possible for the ERT to assess the potential of the ERF to deliver sizeable emission reductions. Further funding for the ERF will be considered in future Australian Government budgets, and an operational review of the ERF will also be conducted towards the end of 2015.

150. In the NC6, Australia presents GHG projections for the period from 2013 to 2030. A 'with carbon price' and a 'without carbon price' scenario are included, with one including the ETS and CFI and one excluding these two PaMs. Both the 'with carbon price' and the 'without carbon price' projections incorporate a range of existing PaMs, such as RET and energy efficiency measures. The 'with carbon price' emission projection corresponds to the 'with measures' scenario required by the UNFCCC reporting guidelines on NCs. The projected increases in GHG emissions (excluding LULUCF) under the 'with carbon price' scenario including ETS and CFI, in relation to the base year, and under the scenario excluding ETS and CFI, are 43.3 and 55.7 per cent, respectively, in 2020. Based on the comparison of the target and the average annual emissions for the first commitment period (2008–2012), Australia is in a position to meet its target for the first commitment period of the Kyoto Protocol (which is an 8 per cent increase). The most recent '2013 projections' scenario of Australia do not include the mitigation effect of CFI and the new measures under the Direct Action Plan (e.g. ERF), which replaced the ETS and will be the main mitigation policy of Australia in order to reach the 2020 targets. The '2013 projections' scenario indicates that Australia may face challenges in meeting its target for the second commitment period of the Kyoto Protocol (which is a 0.5 per cent reduction compared to the base year). Accordingly, Australia estimated that it must limit emissions for the period 2013–2020 to 552 Mt CO_2 eq or 421 Mt CO_2 eq over the entire period (if Australia uses the surplus of the first commitment period of the Kyoto Protocol).

151. The NC6 contains information on how Australia's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. During the review, Australia further elaborated on this issue. Australia will not make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target for the first commitment period. Australia is not inclined towards the use of Kyoto Protocol mechanisms for the second commitment period, and the focus will continue to be on domestic emission reductions.

152. Australia reported that its average annual financial resource increased by 70 per cent between the reporting period for the NC5 and that for the NC6. Australia provided detailed information on the assistance it has made available to many developing country Parties, particularly in the Pacific regions, which are especially vulnerable to the adverse effects of climate change, to help them meet the costs of adaptation to these adverse effects. Furthermore, Australia has a balanced allocation of financial resources between mitigation and adaptation.

153. As one of the hottest and driest continents on Earth, Australia considers the impact of climate change, particularly on the water resources and supply, as the biggest threat for the country, with significant implications for Australia's economic, social and environmental well-being. Australia has undertaken thorough impact and vulnerability assessments in priority areas and sectors, and has implemented adaptation measures based on the results of the assessments.

154. In its NC6, Australia provided extensive information on its actions relating to research and systematic observation and those relating to education, training and public awareness, both on the domestic and on the international level. Since its NC5, Australia has made significant progress in coordinating the delivery of climate change science needed to inform mitigation and adaptation policies and to help shape a global solution to climate change. Its NRM Fund has produced regional-level climate change information to support natural resource management planning. Its climate change scientists are making valuable contributions to global climate change research. The Australian Government, the states and territories, as well as schools, universities, business communities and NGOs, have been very active in recent years with regard to public awareness-raising campaigns. Since the NC5, the Australian Government has undertaken extensive community engagement to explain its vision for a clean energy future and actions to combat climate change.

155. Australia has also provided complete and transparent information with regard to supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol.

156. In the course of the review, the ERT formulated several recommendations relating to the completeness and transparency of Australia's reporting under the Convention and its Kyoto Protocol. The key recommendations[12] are that Australia:

(a) Improve the completeness of reporting by including in the next NC the following:

(i) A description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources, including a description of the Native Vegetation Framework;

[12] The recommendations are given in full in the relevant sections of this report.

(ii) Information related to how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties;

(iii) Information on the total effect of implemented PaMs by gas;

(iv) Information on the total effect of implemented PaMs for historical years (e.g. 2010);

(v) Information, where feasible, on success and failure stories on transfer of technology using table 6 of the UNFCCC reporting guidelines on NCs;

(b) Improve the transparency of its reporting by including in the next NC the following:

(i) Emission trend diagrams and emission intensities in order to provide the reader with a better understanding of GHG emission trends;

(ii) More information on the specific activities included under CFI/ERF for all relevant sectors, including the number of credits generated for each project type;

(iii) More information on how it assures that the changes in emission levels due to CFI/ERF projects are captured by the national GHG inventory;

(iv) A report on any other PaMs outside CFI/ERF that are implemented on the federal, state or local level;

(v) Quantitative information about the factors and key assumptions made during the modelling of projections for each sector, including specifying how RET and energy efficiency measures have been considered in the emissions scenarios;

(vi) Improved estimation and reporting of the total effect of PaMs by identifying the effect of RET and energy efficiency related PaMs;

(vii) Information to show how its financial resources support is "new and additional";

(viii) Distinct information on technology transfer to developing countries from the information on its activities on broader technology cooperation.

V. Questions of implementation

157. During the review, the ERT assessed the NC6, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol and reviewed information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness, transparency and adherence to the reporting guidelines on NCs. No question of implementation was raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 23/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=20>.

FCCC/SBI/2011/INF.1. Compilation and synthesis of fifth national communications. Executive summary. Note by the secretariat. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01.pdf>.

FCCC/SBI/2011/INF.1/Add.1. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Policies, measures, and past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01a01.pdf>.

FCCC/SBI/2011/INF.1/Add.2. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/doc/2011/sbi/eng/inf01a02.pdf>.

FCCC/SBI/2011/INF.2. Compilation and synthesis of supplementary information incorporated in fifth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Note by the secretariat. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf02.pdf>.

FCCC/ARR/2013/AUS. Report of the individual review of the annual submission of Australia submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/aus.pdf>.

FCCC/IRR/2009/AUS. Report of the review of the initial report of Australia. Available at <http://unfccc.int/resource/docs/2009/irr/aus.pdf>.

FCCC/IDR.5/AUS. Report of the in-depth review of the fifth national communication of Australia. Available at <http://unfccc.int/resource/docs/2011/idr/aus05.pdf>.

Sixth national communication of Australia. Available at <http://unfccc.int/files/national_reports/annex_i_natcom_/application/pdf/aus_nc6.pdf>.

2013 GHG inventory submission of Australia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/7383.php>.

2014 GHG inventory submission of Australia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Kym Moore (Department of Environment), including additional material on updated policies and measures, greenhouse gas projections, the national registry, response measures, financial support and recent climate policy developments in Australia. The following documents[1] were also provided by Australia:

Commonwealth of Australia (Clean Energy Regulator) 2012. *About the Renewable Energy Target*. Canberra.

Commonwealth of Australia 2011. Strong Growth, Low Pollution: Modelling a carbon price. Canberra.

Commonwealth of Australia 2012. Australia's Emissions Projections 2012. Canberra.

Commonwealth of Australia 2013. *Australia's Abatement Task and 2013 Emissions Projections*. Canberra.

Commonwealth of Australia 2013. Australian Land Use, Land Use Change and Forestry Emissions Projections to 2030. Canberra.

Commonwealth of Australia 2013. The impact of Kyoto accounting changes on the QELRO and targets. Canberra.

Commonwealth of Australia 2013. Climate Change Mitigation Scenarios: Modelling report provided to the Climate Change Authority in support of its Caps and Targets Review. Canberra.

Commonwealth of Australia 2014. *Emissions Reduction Fund White Paper*. Canberra.

Commonwealth of Australia (Climate Change Authority) 2014. Reducing Australia's Greenhouse Gas Emissions - Targets and Progress Review. Melbourne.

Commonwealth of Australia 2014. Energy White Paper – Green Paper. Canberra.

[1] Reproduced as received from the Party